

2. *Pachytomoides greeni* (Crawford).

*Podagrion greeni* Crawford, 1912,\* pp. 3-4; fig. 1.

This Cingalese species reared from the eggs of a mantid must be referred to this genus, though the female bears an abdominal petiole. Otherwise, it agrees with the species generically.

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NEW ICHNEUMONOIDEA PARASITIC ON LEAF-MINING DIPTERA.

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With a single exception the type specimens of the seven supposed new species described in the following paper were furnished by Prof. F. M. Webster, of the United States Department of Agriculture, and the designated hosts are on his authority. The types of one species were reared by the writer.

Family BRACONIDÆ.

Sub-family Opiinæ.

*Opius utahensis*, n. sp.

Female.—Length, 2.25 mm. Head transverse; vertex, temples, cheeks and occiput smooth and polished with sparse whitish hairs, the frons bare except along the eye margins; face with distinct round punctures and moderately hairy; clypeus fitting closely to the mandibles; mandibles without a notch on the ventral margin; antennæ longer than the body, pubescent, 32-jointed in the type, the first flagellar joint one-third longer than the second. Propleuræ with very fine reticulate sculpture; mesonotum with a median dimple-like impression before the scutellar fovea, parapsidal furrows deeply impressed at the anterior lateral angles, but entirely effaced on the disc; mesopleuræ reticulately sculptured on the disc, with a broad, rugose or foveolate furrow along the dorsal and anterior borders joining a similar furrow which separates the mesopleuræ from the mesosternum; propodeum and metapleuræ strongly rugose. Wings hyaline, stigma lanceolate emitting the radius at about the basal one-third; the radius strongly angulated at the second cubital cross vein, attaining the margin of the wing some distance above the extreme wing apex, its first abscissa less than

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\*Proc. U. S., National Museum, Vol. 42.

half as long as the width of stigma; second discoidal cell closed at the apex or nearly so. Abdomen broadly oval, the first dorsal plate rather thick, with precipitous edges and finely wrinkled, slightly wider at apex than at base and distinctly longer than broad; second segment two times as wide at apex as at base, smooth like the following segments; ovipositor slightly exerted.

Clypeus, mandibles, palpi, scape, tegulae, base of wings, legs except apical joint of the tarsi, and abdomen except the first dorsal plate pale testaceous; apical joints of all tarsi, and the flagellum brown-black; wing veins and stigma brownish; remainder of the body black.

Male.—Essentially like the female, but with the antennae 33-jointed in type.

Type locality.—Salt Lake, Utah.

Host.—*Agromyza parvicornis*.

Type No. 15591, United States National Museum.

One female and five male specimens from the type locality, labelled Webster, No. 8819.—C. N. Ainslie, collector.

Probably closest to *O. bruneiventris* Cr. of the described species, but readily separated from that species by the fact that in *bruneiventris* there is a distinct opening between the clypeus and mandibles, and the mesopleurae are smooth and polished except for the oblique, foveolated furrow below the middle.

*Opius suturalis*, n. sp.

Male.—Length, 1.25 mm. Head transverse, smooth, with few hairs above; the face only slightly hairy; clypeus arcuate, leaving a transverse elliptical opening between it and the mandibles; antennae pubescent, twice as long as the body, 22-jointed in the type. Thorax smooth and shining; mesonotum without a median depression posteriorly, the parapsidal furrows indicated only at the anterior lateral angles of the mesonotum; mesopleurae smooth, with a shallow, ovate, non-foveolated impression below the middle; propodeum smooth and polished. Wings thickly ciliated; the stigma lanceolate, emitting the radius before the middle. The first abscissa of radius short, third abscissa attaining the wing margin far before the extreme wing apex; second discoidal cell not

completely closed at the apex. Abdomen spatulate, as long as the thorax, the first dorsal segment very finely but distinctly rugulose; second segment with a distinct transverse suture before the middle, which does not extend quite to the margins; the surface before the suture and for one-third of the distance beyond distinctly rugulose; segments beyond the second smooth. General color shining black; mandibles and palpi slightly fuscous; tegulae testaceous; wing veins and stigma brownish; legs testaceous, their coxae piceus. Abdomen wholly black.

Type locality.—Tempe, Arizona.

Host.—*Agromyza pusilla*.

Type No. 15592, United States National Museum. Two male specimens from the type locality, labelled Webster, No. 7215.—V. L. Wildermuth, collector.

Distinguished from *O. aridus* by the presence of a distinct transverse furrow on the second segment and by the rugulose sculpture of that segment. May possibly be the male of *O. nanus* Prov., from the type of which it differs, however, in the smooth propodeum and the wholly black abdomen.

*Opius aridis*, n. sp.

Female.—Length, 1.25 mm. Head perfectly smooth and polished, the face moderately hairy; vertex, temples and occiput with sparse, inconspicuous hairs; clypeus arcuated apically, leaving a distinct opening between it and the mandibles; antennae somewhat longer than the body, 18-jointed in the type (varying from 18-jointed to 23-jointed in other specimens of the series), the first joint of the flagellum slightly the longest. Thorax smooth and polished; mesonotum without a median depression or furrow before the scutellar fovea, parapsidal furrows impressed at the anterior lateral angles of the mesonotum, but not attaining to the disc; mesopleurae smooth, with a shallow, ovate, non-foveolated impression below the middle; propodeum moderately hairy, nearly smooth; the apical margin very slightly roughened. Wings densely ciliated, giving them a brownish tinge; stigma lanceolate, the radius arising before the middle, and attaining the wing margin above the extreme wing apex; its first abscissa shorter than the

width of stigma; second discoidal cell closed. Abdomen not longer than the head and thorax; the first dorsal segment longer than wide at apex, smooth and polished like the following segments: ovipositor sheath extending slightly beyond the tip of the abdomen. General colour, black; clypeus, mandibles and palpi stramineous; tips of mandibles brown; legs in the type stramineous, the apices of posterior tibiae, their tarsi and the median tarsi fuscous (in other specimens of the type series the legs vary from pale stramineous to wholly dark brown); tegulae and wing base brownish testaceous; 2nd segment of the abdomen more or less stramineous, first segment and those beyond the second piceous to black; ovipositor sheath black.

Male essentially like the female, but with the antennae 20- 23-jointed.

Type locality.—Tempe, Arizona.

Host.—*Agromyza pusilla*.

Type No. 15593, United States National Museum. The type series contains 10 females and 10 males, labelled Webster, No. 7215.—V. L. Wildermuth, collector.

This species in general appearance closely resembles *Opius* (*Eutrichopsis*) *agromyzae* Vier., which is parasitic on the same host. It may be distinguished from that species, however, by the non-foveolated impression on the mesopleurae and the smooth first abdominal segment.

*Opius bruneiipes*, n. sp.

Female.—Length, 1.25 mm. Head perfectly smooth and highly polished; face sparse'y hairy; vertex, temples and occiput with a few scattering and inconspicuous hairs; clypeus arcuated on the anterior margin, leaving a transverse, elliptical opening between it and the mandibles; antennae longer than the body, pubescent 21-jointed in the type, the first joint of flagellum slightly longer than the second. Thorax smooth and highly polished, robust, without a median dimple-like depression on the mesonotum, parapsidal furrows wholly effaced or represented by only a few indistinct punctures at anterior lateral angles; mesopleurae without a trace of an impressed furrow above the coxae; propodeum entirely smooth and polished, with very few hairs; metapleurae also smooth.

Wings densely ciliated; the stigma lanceolate and rather broad, much broader than the first abscissa of radius is long; radius arising much before the middle and attaining the wing margin far above the extreme wing apex; its first abscissa very short; second discoidal cell open below at the apex. Abdomen ovate, about as long as the thorax; its first dorsal segment smooth and polished, or nearly so; following segments also smooth; second segment more than twice as wide at apex as at base; following segments tapering to the apex; ovipositor slightly exerted. General color black; mandibles brownish, tips black; palpi fuscous; scape dark brown, flagellum brown-black; tegulae black; wing veins and stigma brownish; legs including coxae, dark brown; the anterior pair slightly paler; first and second abdominal segments brownish; following segments black; ovipositor sheath black.

Male.—Essentially as in female.

Type locality.—Lakeland, Florida.

Host.—*Agromyza pusilla*.

Type No. 15594, United States National Museum. The type series consists of three females and three males from the type locality, labelled Webster, No. 9489.—G. G. Ainslie, collector.

The species is distinguished from *O. aridus* by the total absence of the mesopleural furrow, and the open second discoidal cell as well as by the dark brown legs and fuscous palpi.

*Opius succineus*, n. sp.

Female.—Length, 2 mm. Head transverse, smooth and polished, sparsely hairy; the face moderately hairy, impunctate, with a rather more distinct median ridge than usual; clypeus arcuate, leaving a transverse, elliptical opening between it and the mandibles; antennae longer than the body, pubescent, 29-jointed in the type. Propleurae smooth; mesonotum with a median dimple-like impression before the scutellar fovea, the parapsidal furrows distinctly impressed anteriorly for nearly one-third the length of the mesonotum and faintly traceable as shallow impressed lines to the median dimple; mesopleurae smooth, but with a strongly oblique foveolate furrow below the middle; propodeum indefinitely sculptured faintly rugulose, with a sinuous, transverse raised line or carina near the middle. Wings hyaline, the stigma lanceolate;

the radius arising near the basal one-third of the stigma and attaining the wing margin only slightly above the wing apex; its first abscissa about as long as half the width of stigma; second discoidal cell closed. Abdomen broadly oval; the first dorsal plate distinctly longer than broad, abruptly narrowed before the middle, indefinitely rugulose; segments beyond the first smooth; ovipositor slightly exerted. General colour brownish yellow; vertex, occiput and temples black; cheeks and face reddish testaceous; ovipositor black; wing veins and stigma brownish; the dorsal abdominal segments beyond the second brownish; scape and legs pale amber.

A male paratype is like the female in sculpture but much darker in colour; the thorax above and at sides strongly tinged with brownish.

Type Locality.—Lafayette, Indiana.

Host.—*Agromyza* sp., mining leaves of Panicum.

Type No. 15595, United States National Museum. The female type is labelled Webster, No. 3814, W. J. Phillips, collector. The male bears the same number, but was collected by P. Luginbill. Another male specimen, labelled Webster, No. 9302—J. J. Davis, collector—was reared from the same source at Danville, Illinois.

This species superficially resembles *Opius diastatae* Ashm., a parasite of the corn leaf-miner, which was described by Ashmead under *Bracon* (Proc. U. S. Nat. Mus., 1888, p. 617). It may be distinguished from that species by the foveolate mesopleural furrow and the dimple-like median impression on the mesonotum.

Family ALYSIIDÆ.

Subfamily Dacnusiinæ.

*Dacnusa scaptomyzae*, n. sp.

Female.—Length, approximately 2 mm. Head transverse, nearly twice as broad as long; above perfectly smooth and highly polished, with a very few scattered whitish hairs on the vertex and occiput; occiput concave; temples broad and slightly rounded; vertex divided by a shallow median groove, running from the anterior ocellus to the occiput; eyes bare, ovate; face with moderately dense whitish pubescence, smooth or nearly so, the punctures being very minute, a rather distinct median carina on the upper half; maxillary palpi 6-jointed, the two basal joints about equal in

length and together scarcely longer than the third; labial palpi 4-jointed; mandibles 3-toothed, the median tooth longest and acute; the two laterals short and blunt; antennæ pubescent, 23-24 jointed, a little longer than the body; first joint of the flagellum longer than the second, following joints decreasing in length to the tip.

Thorax smooth and shining; prothorax short, mostly concealed from above; mesonotum gibbous, polished, without pubescence, except for four or five hairs on each lobe opposite the base of the wings; parapsidal furrows impressed anteriorly for about one-third the length of the mesoscutum, a short longitudinal incision on the median line just before the scutellum, varying somewhat in length, but never extending more than half the length of the mesonotum; scutellar fovea broad and deep, with several carinæ crossing it at the bottom; mesopleuræ smooth, polished, glabrous, except for a few hairs at the posterior angle, just above the median coxæ, and with a shallow longitudinal smooth depression below the middle; metapleuræ moderately hairy and mostly rugulose, the disc smooth; propodeum finely rugose, more strongly so posteriorly, not conspicuously pubescent, but with a few scattering hairs most abundant laterally. Wings hyaline, iridescent; stigma long, lanceolate, rather broad, extending half the length of the radial cell; radius arising at about the basal one-third of the stigma and attaining the wing margin about half way between the apex of stigma and the extreme wing apex, its first abscissa nearly perpendicular and slightly longer than the width of stigma; second abscissa slightly straightened toward the wing margin, but not concave beneath, radial cell broad; cubital cross-vein oblique, somewhat longer than the first abscissa of radius; recurrent nervure oblique, joining the first cubital cell before the cubital crossvein, a distance equal to about half the length of the cubital crossvein; first discoidal cell smaller than the first cubital, submedian cell slightly longer than the median, the second discoidal completely closed.

Posterior legs longer than the body, the two trochanter joints together about as long as their coxæ, tibiæ as long as the femora and trochanters combined, tarsi as long as the tibiæ, the first joint nearly twice the length of the second.

Abdomen subsessile, as long as the thorax, ovate, squarely cut off at the apex, the apical segments retracted; first segment rugose, broader at the apex than at the base, as long as the posterior coxæ, its spiracles about midway of the segment and prominent, basally the segment is bicarinate, the carinæ originating at the lateral angles and meeting before the spiracles, back of the triangular area enclosed by the carinæ, the surface is convex, the posterior lateral angles depressed; segments beyond the first smooth and polished; ovipositor sheath about one-fourth the length of the abdomen.

Colour.—Shining black; palpi, labrum, scape and legs, including the coxæ, testaceous; mandibles slightly darker; flagellum brown-black, the basal joints paler; first segment of the abdomen black, the following dorsal segments very dark brown, the second segment often somewhat testaceous on the disk. Wing veins and stigma brownish testaceous.

Male.—Like the female in every respect, except that the antennæ are 24-25-jointed; the stigma is broader than the length of the first abscissa of radius, considerably broader than in the female; the abdomen is slightly longer than the thorax and attains its greatest width just before the apex, therefore not ovate, but spatulate.

Type locality.—College Park, Md.

Host.—*Scaptomyza flaveola* Meig.

Type Cat. No. 15596, U. S. National Museum. Paratypes in the United States National Museum and the Collection of the Maryland Agricultural Experiment Station.

During the season of 1912 the dipterous leaf miner *Scaptomyza flaveola* Meig. was collected by the writer in three different localities and on as many different dates. June 3rd, at Hyattsville, Md., it was found infesting the leaves of turnips in a small garden plot. Both larvæ and puparia were present in large numbers. The puparia were found either in the original larval mines or beneath wilted and fallen leaves on the ground. The majority seemed to have pupated in the leaves, and none seemed to have entered the soil to transform. Many leaves were collected and taken to the laboratory, and from these were reared during the month of June



a large number of the flies, and about an equal number of *Dacnusa scaptomyzae*.

July 1st, at Hancock, Md., mined leaves of radish were collected, from which were reared the same fly, as well as several specimens of the parasite.

July 30th, at College Park, Md., several cabbage plants growing in a box, where they had been seeded for transplanting, were found severely mined. Here again the same fly and many specimens of the parasite were reared during the month of August.

*Dacnusa agromyzæ*, n. sp.

Female.—Length, approximately 2 mm. Head twice as broad as long, smooth, with a very few scattering hairs on the occiput, vertex and cheeks; the face moderately hairy, with a slight median carina on the upper half; vertex not divided by a median furrow; eyes bare, ovate; maxillary palpi 6-jointed, the two basal joints together not as long as the third, the fourth joint as long as 1, 2 and 3 combined; labial palpi 4-jointed; mandibles with the two lateral teeth acute, the median tooth longer, with a distinct notch on its ventral margin near the base making the mandible appear four-toothed; antennæ 33-36-jointed, nearly or quite twice as long as the body; the first joint of the flagellum about equal to the scape and pedicel combined; following joints shorter and decreasing in length toward the tip.

Prothorax mostly concealed from above; mesonotum slightly bilobed owing to a broad depression extending from base to apex along the median longitudinal line, its surface anteriorly and medially punctate and covered with white hairs, the broad posterior angles opposite the tegulae smooth and glabrous, parapsidal furrows not at all impressed; scutellar fovea deep, with several cross ridges at the bottom; mesopleurae polished and glabrous except for a few hairs just above the median coxae, with a shallow, longitudinal, smooth depression below the middle; metapleuræ covered with a dense, short, white pile, completely concealing its sculpture; propodeum high and broad, abruptly truncate posteriorly, rugose and covered with white pile, which is not as dense as that on the metapleuræ. Stigma linear and extending nearly two-thirds the length of the radial cell; radius arising at about the basal one-fourth of the

stigma; its first abscissa not quite perpendicular and slightly shorter than the cubital crossvein, second abscissa curving very slightly into the radial cell toward the apex and attaining the wing margin far above the extreme wing apex; recurrent nervure interstitial with the cubital crossvein; submedial cell longer than the median; second discoidal cell open beneath.

Posterior legs longer than the whole body, their tibiae scarcely as long as the femora and two joints of the trochanter combined; coxae equal to the first abdominal segment, first tarsal joint twice the length of the second.

First abdominal segment convex, rugose, wider at apex than at base; bicarinate at base, the carinae originating at the lateral angles and converging posteriorly, but fading out before meeting; spiracles not prominent and placed slightly before the middle of the segment; sides of the segment parallel beyond the spiracles; the posterior lateral angles somewhat flattened; whole abdomen slightly longer than the thorax; the segments beyond the first smooth and but little wider than the first segment at apex, their sides parallel. Ovipositor sheath less than one-fourth the length of the abdomen.

Colour as in the preceding species, except that the legs are reddish testaceous and the abdomen, including the first segment, is brownish testaceous.

The male is like the female.

Type locality.—Lafayette, Indiana.

Host.—*Agromyza angulata*.

Type No. 15597, United States National Museum.

Four specimens received from Prof. F. M. Webster, reared by P. Luginbill, and bearing Webster's number, 9700.

This species would apparently fall in Foerster's genus *Mesora*, which genus is believed to be untenable.

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## NOTES ON SOME SPECIES OF THE GENUS *PROSOPIS*.

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### *Prosopis mesillæ* Cockerell.

This is a valid species, and not a form of *P. cressoni* as it is given by Metz. Externally the two are easily separable. *P.*